

**California High Speed Train Project
San Francisco to San Jose Section Project EIR/EIS
Supplemental Alternatives Analysis Report
August 2010**

ES.0 Executive Summary

ES.1 SUPPLEMENTAL ALTERNATIVES ANALYSIS REPORT RESULTS

The August 2010 San Francisco to San Jose (SF to SJ) Supplemental Alternatives Analysis (AA) Report updates the Preliminary AA Report that the California High Speed Rail Authority (Authority) issued for the SF to SJ high-speed train (HST) section in April 2010. Modifications are being recommended for the alternatives and design options described in the Preliminary AA Report based on consultation with local cities and agencies and additional engineering and environmental detail that has become available. The Supplemental AA Report presents the changes from the earlier Preliminary AA Report, while referencing the previous material and text that has not changed. These recommendations are based on information developed to date and present concepts that will continue to be refined and will be analyzed during the preparation of the Draft EIR/EIS.

ES.1.1 Alternatives Recommended to be Carried Forward in 2010 Preliminary AA Report

The Preliminary AA Report recommended that a variety of vertical options for the Caltrain corridor be further evaluated as part of the on-going engineering and environmental process. HST stations locations were identified at San Francisco (a joint terminal solution at Transbay Transit Center and 4th and King), Millbrae and San Jose, with a potential Mid-Peninsula station located at either Redwood City, Palo Alto or Mountain View. Generally, the HST Alternative would require four tracks for HST and Caltrain service in the Caltrain corridor. A number of design options were recommended to be examined throughout the length of the corridor.

ES.1.2 Design Options Recommended to be Carried Forward in Supplemental AA Report and Project EIR/EIS

This August 2010 Supplemental AA Report identifies two basic design options to be examined in the Draft EIR/EIS. These two options represent “stitched together” alignments that would result in a four track, fully grade separated railroad serving both HST and Caltrain between Transbay Transit Center and 4th and King in San Francisco and San Jose Diridon Station in San Jose. These design options were developed considering the following goals:

1. **Constructability:** Use uniform structure types that are well known in the rail industry and can be applied uniformly throughout the corridor
2. **Minimize Displacements:** Employ the narrowest track configuration to minimize ROW requirements
3. **Minimize disruption to the Caltrain system during construction:** Use three basic structure typologies (at-grade, aerial and trench) that can be constructed and staged in a way that allows Caltrain to continue in operation during construction.
4. **Minimizes construction costs:** Develop Design Options A and B to minimize construction costs of the Statewide High Speed Train System while delivering a four track, interoperable, grade separated railroad that can be shared by HST and Caltrain.
5. **Meet community needs:** Address city and public interest in alternatives that would not visually divide communities and are responsive to concerns regarding potential noise and vibration impacts.

In the community meetings there was significant interest in design options (hybrid configurations) that stack two tracks over two tracks in either combinations of tunnels and trenches, or in deep trenches that could also act as tunnels for high speed trains on the lower level and a trench for Caltrain and freight service on the upper level. The perceived advantage of these alternatives was that they had a narrow footprint (66-70 feet wide) and would be appropriate in those areas where the existing Caltrain right of way is particularly narrow. The design team looked into applying this type of solution but found that it had the following shortcomings:

- In order to change from a four-track parallel configuration to the four-track stacked configuration, a 5000-foot long transition segment is required. In this transition segment, the “weaving” structures needed to move two tracks from a side-by-side to a stacked configuration require right-of-way approximately 120-135 feet wide. For each stacked segment, two of these 5000-foot long transition segments are required, one to the north and one to the south of the stacked area. Combined, these two transition segments would create about 2 miles of alignment that would most likely have adverse affects on permanent right of way needs. Operational flexibility on the corridor would be limited in the stacked areas. Trains would be limited to either the Caltrain or HST tracks for the length of the configuration (ranging from 3-6 miles) with no opportunity for connection.
- Constructability would be difficult for the deep trench alternative. It would require a 70-80 foot deep trench to be built for HST at the lower level and then an intermediate floor would need to be built to support the Caltrain and freight trains at the upper level. This would be difficult and very expensive to build.

Maintenance Facility

Initially, there were three potential maintenance facility sites identified for consideration at: the Port of San Francisco Piers 90-94, San Francisco International Airport and a site in the Bayshore / Brisbane area.

Port Of San Francisco: The Port site was not studied further because it was too small and difficult to access from the Caltrain mainline in the vicinity of the Quint Street lead. The facility would need to be “stub ended” which is not ideal for operations. In order to accommodate the forecasted storage needs for San Francisco, it would most likely need to be two levels to accommodate both the maintenance and storage functions at the site which would be difficult to construct and costly. For these reasons this site is not recommended for study in the EIR/EIS.

San Francisco International (SFO): The SFO site would have provided adequate space (100 acres) however it too would have been stub ended. It also would be difficult to access from the Caltrain mainline and would possibly require modifications to the Hwy 101 interchange. After meeting with staff at SFO, it was determined that the site was not available as the lease to the site had been renewed with the current tenants. Consequently the site is not being recommended for study in the EIR/EIS.

Brisbane / Bayshore: The Brisbane site would provide adequate space (100 acres) for maintenance and storage for the high speed train uses. There is adequate space to design a facility with a loop track which would be able to provide operational feasibility for a maintenance facility. The site has good access from the Caltrain mainline tracks and allows for both southbound and northbound access. For these reasons, the Brisbane / Bayshore site should be carried forward for study in the EIR/EIS. The city is currently evaluating other land use plans for this area and the Authority would work closely with the city to review a proposed maintenance facility and seek a site that is complementary to the City's vision.

Design Option A

Design Option A includes predominantly at-grade and aerial structure options to travel the length of the San Francisco to San Jose corridor. A summary of the subsection options studied as part of this design option is presented in Table ES.1-1 and shown in Figure ES.1-1, with the table listing whether they will or will not be carried forward for analysis in the Draft EIR/EIS. The vertical options with a grey box and the letter "A" in them will be carried forward; those which are blank will not be carried forward. Where two grey boxes with the letter "A" appear in one subsection, this denotes a configuration where some tracks will be in the first vertical option and the other tracks will be in the second vertical option.

Table ES.1-1 Design Option A – Subsection Options Carried Forward

City or Town	Sub-section	Location	Vertical Options Carried Forward					
			Aerial Viaduct	Berm	At Grade	Open Trench	Covered Trench/Tunnel	Two Track Deep Tunnel
San Francisco	0(a)	HST and Caltrain to both Transbay and 4 th & King			4 th and King		TTC	
	1A	North of Mission Bay Drive to South of 16 th Street			A ¹		A	
	1B-1C	South of 16 th Street to North of Cesar Chavez Street			A		A	
	1D-1G	North of Cesar Chavez Street to South Portal Tunnel No. 4			A		A	
South San Francisco	2A	South Portal Tunnel No. 4 to south of Colma Creek			A			
South San Francisco / San Bruno	2B	South of Colma Creek to south of I-380		A				
San Bruno	2C(1)	South of I-380 to south of Angus Avenue		A				
	2C(2)	South of Angus Avenue to south of Center Street		A		A		
Millbrae / Burlingame	2D	South of Center Street to south of Millbrae Avenue			A		A	

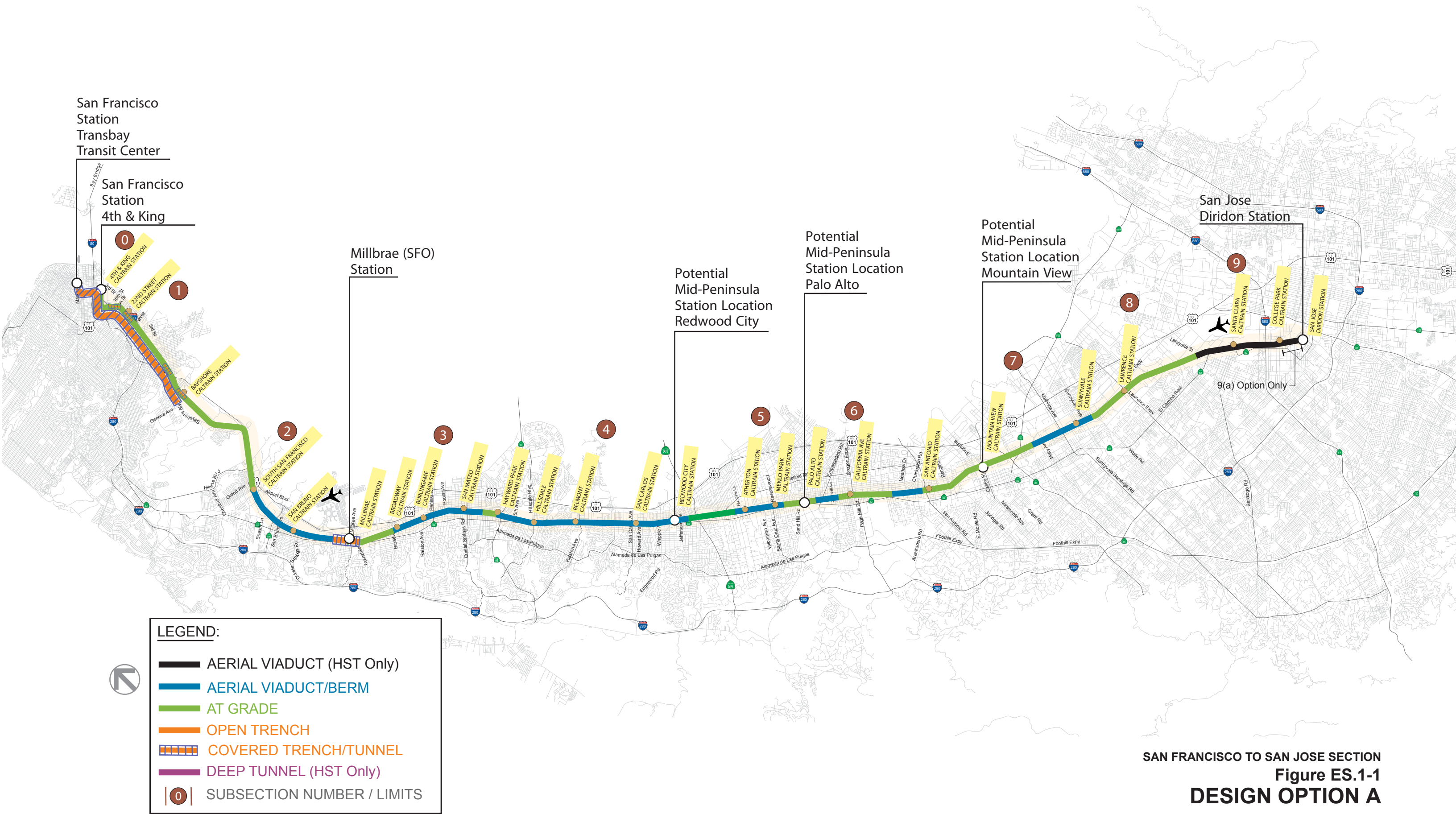
City or Town	Sub-section	Location	Vertical Options Carried Forward					
			Aerial Viaduct	Berm	At Grade	Open Trench	Covered Trench/Tunnel	Two Track Deep Tunnel
Burlingame / San Mateo	3A	South of Millbrae Avenue to south of Mills Creek	A					
	3B	South of Mills Creek to north of Villa Terrace	A					
San Mateo	3C-3D	North of Villa Terrace to north of Hayward Park Station	A					
	3E	North of Hayward Park Station to north of Highway 92			A			
	4A	North of Highway 92 to south of 25 th Avenue		A				
	4B(1)	South of 25 th Avenue to 42 nd Avenue		A				
Belmont / San Carlos	4B(2)	42 nd Avenue to south of Cordilleras Creek	A					
Redwood City	4C	South of Cordilleras Creek to north of Woodside Road	A					
San Mateo County (North Fair Oaks)	4D	North of Woodside Road to north of 5 th Avenue			A			
	5A	North of 5 th Avenue to south of 5 th Avenue			A			
Atherton/ Menlo Park	5B	South of 5 th Avenue to south of Ravenswood Avenue	A					

City or Town	Sub-section	Location	Vertical Options Carried Forward					
			Aerial Viaduct	Berm	At Grade	Open Trench	Covered Trench/Tunnel	Two Track Deep Tunnel
	5C	South of Ravenswood Avenue to north of San Mateo County/Santa Clara County Line			A			
Palo Alto	6A	North of San Mateo County/Santa Clara County Line to south of Embarcadero Road			A			
	6B	South of Embarcadero Road to south of Churchill Avenue	A					
	6C	South of Churchill Avenue to north of East Meadow Drive			A			
	6D	North of East Meadow Drive to north of Adobe Creek	A					
Mountain View	7A	North of Adobe Creek to north of Rengstorff Avenue			A			
	7B	North of Rengstorff Avenue to north of Stevens Creek			A			
	7C	North of Stevens Creek to south of Route 237			A			
Sunnyvale / Santa Clara	7D(1)	South of Route 237 to north of Mathilda Avenue	A					

	7D(2)	North of Mathilda Avenue to north of Fair Oaks Avenue			A			
	8A	North of Fair Oaks Avenue to south of Scott Boulevard			A			
Santa Clara	8B	South of Scott Boulevard to north of De La Cruz Boulevard	HST Only A					
	9A	North of De La Cruz Boulevard to South of Taylor Street	HST Only A ²					
San Jose	9B	South of Taylor Street to Diridon Station	HST Only A					

1=1A-1G Assumes use of existing Caltrain tunnels

2=9A and 9B an additional aerial alignment was identified during the Preliminary AA review process that moves the horizontal alignment east, away from residential neighborhoods.



Design Option B

Design Option B and sub-option B1 would include studying at-grade, aerial, trench and tunnel designs to travel the length of the San Francisco to San Jose corridor. In the southern part of the corridor (Palo Alto, Mountain View and Sunnyvale), Design Option B alternates between trench, at-grade, and aerial options. Sub-option B1 essentially continues the trench in subsections where Design Option B would bring the four track system back to grade or elevated. A summary of the subsection options studied as part of this design option is presented in Table ES.1-12 and shown in Figures ES.1-2 and ES.1-3, with the table listing whether they will or will not be carried forward for analysis in the Draft EIR/EIS. The vertical options with a grey box and the letter “B or B1” in them will be carried forward, those which are blank will not be carried forward. Where two grey boxes with the letter “B” appear in one subsection, this denotes a configuration where some tracks will be in the first vertical option and the other tracks will be in the second vertical option.

Partially or completely covered trench or short tunnel sections may be constructed to ameliorate either narrow right of way or environmental concerns on the alignment between San Francisco and San Jose. The downtown San Mateo area is one location that could require partial or full coverage of the trench to replace an existing street. The San Francisquito creek in Palo Alto could be a location where a short tunnel underneath the creek would be necessary in order to not interfere with the creek’s water flow. In other sections of the system, to the extent feasible, the trench will be designed to not preclude future decking or coverage. This would allow cities to cover sections of the trench if they found it desirable and if it were acceptable by Caltrain and the Authority. Covered sections of less than 600 feet in length could be added at a later date without requiring substantial re-design and added features.

Table ES.1-2 Design Option B and Sub-Option B1 – Subsection Options Carried Forward

City or Town	Sub-section	Location	Vertical Options Carried Forward					
			Aerial Viaduct	Berm	At Grade	Open Trench	Covered Trench/Tunnel	Two Track Deep Tunnel
San Francisco	0(a)	HST and Caltrain to both Transbay and 4 th & King			4 th and King		TTC	
	1A	North of Mission Bay Drive to South of 16 th Street			B ¹		B	
	1B-1C	South of 16 th Street to North of Cesar Chavez Street			B		B	
	1D-1G	North of Cesar Chavez Street to South Portal Tunnel No. 4			B		B	
South San Francisco	2A	South Portal Tunnel No. 4 to south of Colma Creek			B			
South San Francisco / San Bruno	2B	South of Colma Creek to south of I-380		B				

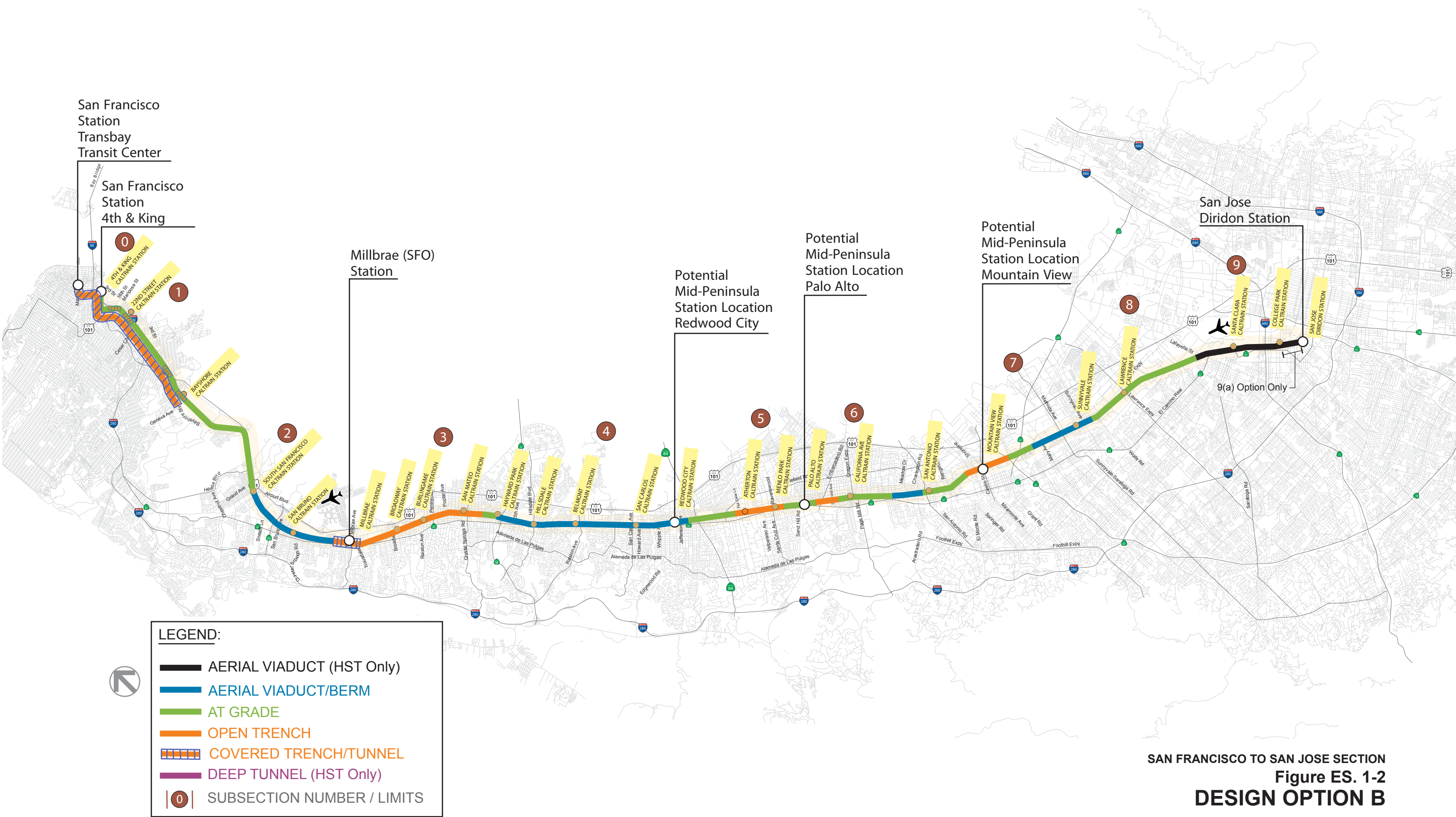
City or Town	Sub-section	Location	Vertical Options Carried Forward					
			Aerial Viaduct	Berm	At Grade	Open Trench	Covered Trench/Tunnel	Two Track Deep Tunnel
San Bruno	2C(1)	South of I-380 to south of Angus Avenue		B				
	2C(2)	South of Angus Avenue to south of Center Street		B		B		
Millbrae / Burlingame	2D	South of Center Street to south of Millbrae Avenue			B		B	
Burlingame / San Mateo	3A	South of Millbrae Avenue to south of Mills Creek				B		
	3B	South of Mills Creek to north of Villa Terrace				B		
San Mateo	3C-3D	North of Villa Terrace to north of Hayward Park Station				B		
	3E	North of Hayward Park Station to north of Highway 92			B			
	4A	North of Highway 92 to south of 25 th Avenue		B				
	4B(1)	South of 25 th Avenue to 42 nd Avenue		B				
Belmont / San Carlos	4B(2)	42 nd Avenue to south of Cordilleras Creek	B					
Redwood City	4C	South of Cordilleras Creek to north of Woodside Road	B					
San Mateo County (North Fair Oaks)	4D	North of Woodside Road to north of 5 th Avenue			B			
	5A	North of 5 th Avenue to south of 5 th Avenue			B			
Atherton/ Menlo Park	5B	South of 5 th Avenue to south of Ravenswood Avenue				B		

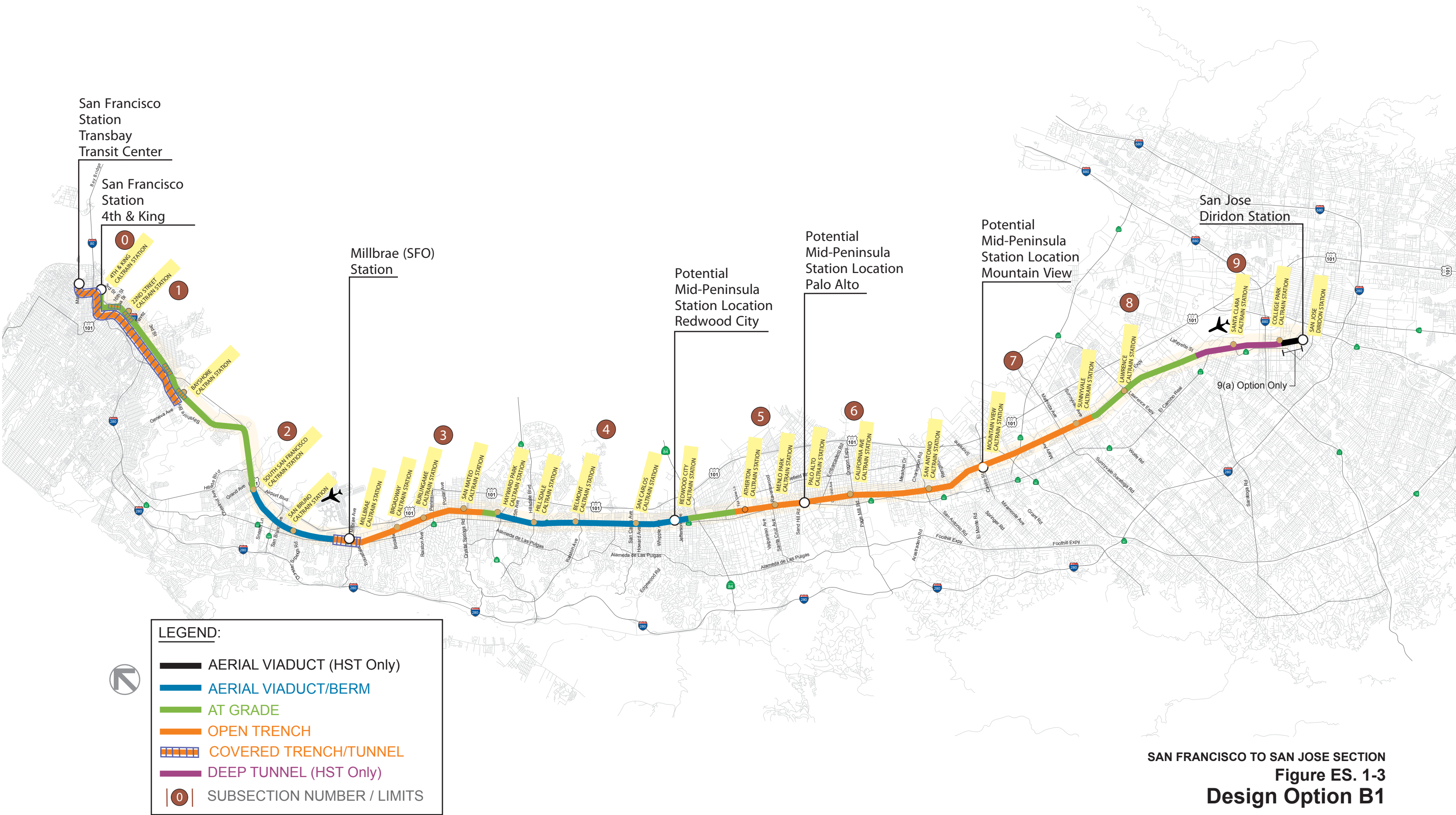
City or Town	Sub-section	Location	Vertical Options Carried Forward					
			Aerial Viaduct	Berm	At Grade	Open Trench	Covered Trench/Tunnel	Two Track Deep Tunnel
	5C	South of Ravenswood Avenue to north of San Mateo County/Santa Clara County Line				B		
Palo Alto	6A	North of San Mateo County/Santa Clara County Line to south of Embarcadero Road				B		
	6B	South of Embarcadero Road to south of Churchill Avenue				B		
	6C	South of Churchill Avenue to north of East Meadow Drive			B	B1		
	6D	North of East Meadow Drive to north of Adobe Creek	B			B1		
Mountain View	7A	North of Adobe Creek to north of Rengstorff Avenue			B	B1		
	7B	North of Rengstorff Avenue to north of Stevens Creek				B		
	7C	North of Stevens Creek to south of Route 237			B	B1		
Sunnyvale / Santa Clara	7D(1)	South of Route 237 to north of Mathilda Avenue	B			B1		
	7D(2)	North of Mathilda Avenue to north of Fair Oaks Avenue			B	B1		
	8A	North of Fair Oaks Avenue to south of Scott Boulevard			B			
Santa Clara	8B	South of Scott Boulevard to north of De La Cruz Boulevard	HST Only B					HST Only B1

City or Town	Sub-section	Location	Vertical Options Carried Forward					
			Aerial Viaduct	Berm	At Grade	Open Trench	Covered Trench/Tunnel	Two Track Deep Tunnel
	9A	North of De La Cruz Boulevard to South of Taylor Street	HST Only B ²					HST Only B1
San Jose	9B	South of Taylor Street to Diridon Station	HST Only B					

1=1A-1G Assumes use of existing Caltrain tunnels

2=9A and 9B an additional aerial alignment was identified during the Preliminary AA process that moves alignment east, away from residential neighborhoods.





Track Configuration

The Supplemental AA Report recommends that the design and environmental efforts focus on a horizontal track configuration that has Caltrain predominantly operating on the outside two tracks and HST on the inside two tracks (see figure ES.1-4). This configuration is recommended primarily because it requires significantly less (approximately 20% less) right of way than having both Caltrain tracks on one side of the corridor (see figure ES. 1-5). This reduced need for ROW would be particularly significant where Caltrain stations are close together (approximately a mile apart) and there is insufficient distance to narrow the ROW width between stations. This configuration also allows greater flexibility in coordinating schedules and sharing track capacity on the corridor for the reason that would allow HST trains to overtake other trains in certain areas without crossing opposing rail traffic.

Figure ES.1-4
Typical Track Configuration to be Carried Forward in the EIR/EIS

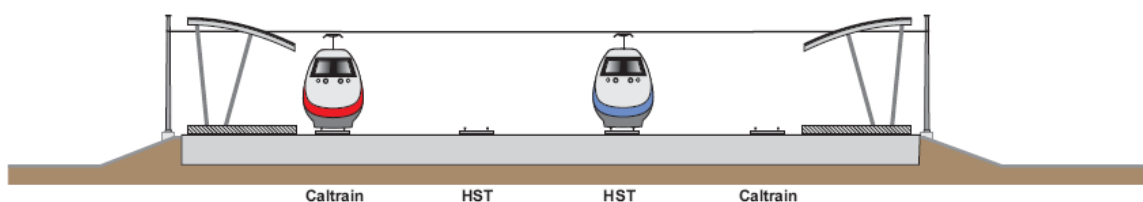
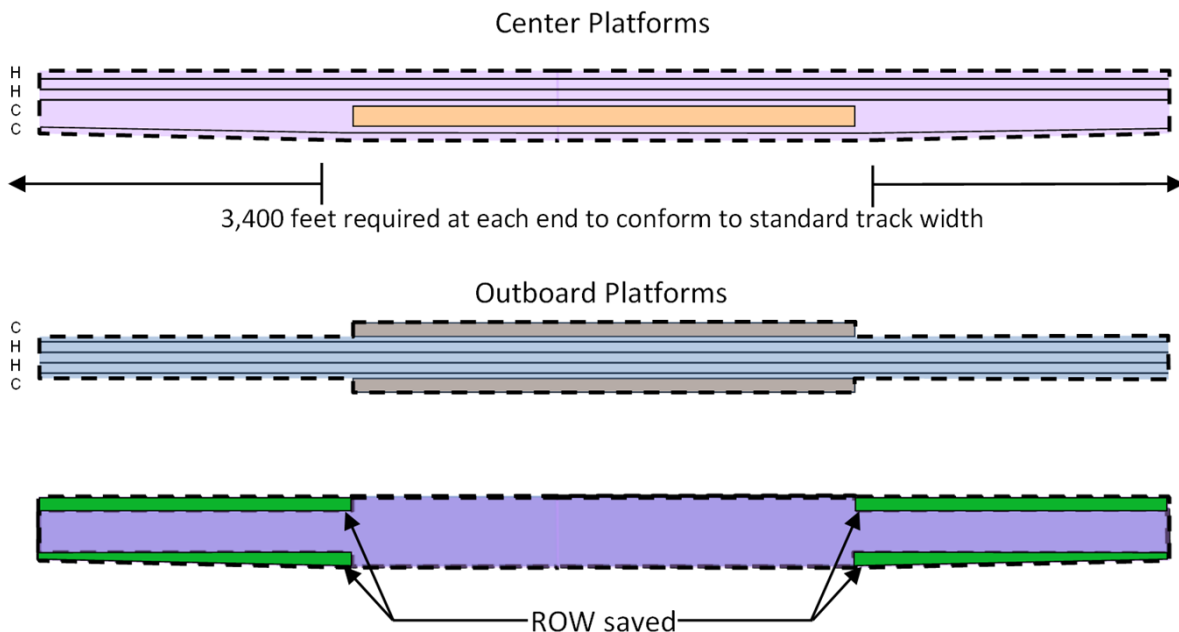


Figure ES.1-5
Potential ROW Saving with Outboard Platform Track Configuration



ES.2 ALTERNATIVES ANALYSIS EVALUATION MEASURES

The alignment alternatives, station location and design options recommended to be carried forward into the detailed alternatives analysis were assessed for each of the project objectives and evaluation measures. This preliminary information was then used to evaluate which alternatives are potentially feasible and practicable and are recommended for preliminary engineering design and environmental review as part of the EIR/EIS. The primary evaluation measures are listed below.

- ♦ Design objectives (including measures such as travel time and cost)
- ♦ Land use (including measures such as consistency with land use and general plans)
- ♦ Constructability (including measures such as track type construction and access to the corridor)
- ♦ Community impacts (including measures such as amount of land acquisition)
- ♦ Natural resources (including measures such as impacts to wetlands, potential threatened and endangered species habitat, and other resources)
- ♦ Environmental quality (including measures such as number of sensitive noise receptors)
- ♦ Additional considerations (including measures such as ability to meet project purpose and support by public and agencies)

ES.3 SAN FRANCISCO TO SAN JOSE SECTION HST PROJECT BACKGROUND

The San Francisco to San Jose HST Section is part of Phase 1 of the HST System. The Caltrain Corridor route of the San Francisco to San Jose Section was analyzed, evaluated and selected for further study in the 2005 Final Program EIR/EIS for the Proposed California High-Speed Train System (referred to hereafter as the Statewide Program EIR/EIS) and again in the 2008 Bay Area to Central Valley HST Final Program EIR/EIS (referred to hereafter as the Bay Area to Central Valley Program EIR/EIS).

Stations are proposed in the City of San Francisco at the Transbay Terminal and at 4th and King Streets; in the City of Millbrae at the existing Millbrae BART/Caltrain station; and in the City of San Jose at the Intermodal Diridon station. One potential mid-peninsula station stop is also under consideration. Alternative locations being reviewed for this potential stop are in the City of Redwood City at the existing downtown Caltrain station; in the City of Palo Alto at the existing Caltrain station; and in the City of Mountain View at the existing Caltrain/VTA LRT station.

The Bay Area to Central Valley Program EIR was the subject of a lawsuit filed by the Town of Atherton and others in August 2008. In November 2009, the court issued its decision in the case. The court concluded that the EIR complied with CEQA in most respects, including its analysis of alternatives and its analysis of impacts and mitigation in the areas of biology, noise, aesthetics, growth and heritage trees. However, the court indicated that the EIR required corrective work and recirculation for certain issues. In accordance with the court decision, the Authority has rescinded its resolution certifying the Bay Area Program EIR and is preparing revisions to the Program EIR to comply with the court's ruling. On March 11, 2010, the Authority began circulating Revised Draft Program EIR Material for public review and comment prior to the Authority's consideration of the revised Program EIR. It is expected that the Authority will consider whether to certify the Revised Final Program EIR and make a new decision in the fall of 2010.

Pre-scoping public outreach activities for the San Francisco to San Jose EIR/EIS were initiated in December 2008. Public scoping meetings were held in January 2009, and information meetings were held at the proposed/potential HST station locations. After the scoping period ended, an initial range of alternatives for the San Francisco to San Jose Section was developed. Because the Caltrain corridor is

constrained by development on both sides, the alignment alternatives available are predominately vertical options. In fall 2009, the initial alternatives were presented to the Technical Working Groups and Policy Working Group. In addition, three public workshops were held, and the regional team met with the staff of each City along the corridor to review the options. See Section 3.3.2 and Appendix F of the Preliminary and Supplemental AA for further details regarding agency coordination and public outreach.

ES.4 PUBLIC AND AGENCY OUTREACH EFFORTS WITH THE PRELIMINARY ALTERNATIVES ANALYSIS

Since the publication of the Preliminary AA on April 8, 2010, a series of 32 meetings and workshops, with a total of more than 1,500 participants, were held along the corridor to inform the public and gather comments on the Preliminary Alternatives Analysis Report. Meetings were noticed online at the CHSRA website Calendar, on the Peninsula Rail Program website, and on the websites of local communities, via e-blasts utilizing the project email database, as well as through mailings and other notices in partnership with local communities. The following is a summary of the feedback received from the public:

- There was concern about potential impacts to properties along the right of way, especially in those areas where the right of way is narrow.
- There was concern about the potential noise and visual impacts generated by the project, especially as it relates to above-grade alternatives.
- Numerous comments expressed a preference for below-grade alternatives. Several communities asked that below-grade options be added for further consideration.
- There was a request to minimize the use of elevated retained fill berms.
- There were concerns about the overall cost of the system.

ES.5 NEXT STEPS

The Preliminary and Supplemental AA Reports will inform the Project Description for the Project EIR/EIS. They will also focus the next level of design (15 percent) and inform the analysis of environmental impacts. This ongoing work will provide the Authority, FRA and the communities in the Caltrain corridor a fuller picture of the design options in each subsection and a comprehensive review of project's benefits and impacts.

As the engineering and environmental work continues, the Authority will continue to meet and engage communities along the San Francisco to San Jose HST section in a discussion about the different alternatives. These activities will inform preparation of the Draft Project EIR/EIS, which is currently scheduled to be released for public comment in December of 2010.